REMARKS

The Office Action of December 31, 2009, has been carefully studied. Claims 1, 4, 5, 9, 11-17, 19-22 and 24 currently appear in this application. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicant respectfully requests favorable reconsideration and formal allowance of the claims.

Claim Amendments

Claim 1 has been amended to specify that the "recombinant protein" is an antibody or a modified antibody having an isoelectric point of pH 4.0. Support for this may be found in the specification as filed at page 9, line 27 to page 13, line 20 and page.

The sample to be treated is a culture medium from an antibody producing cell culture. Support for this amendment is found in the specification as filed at page 12, line 23 to page 13, line 2 and page 5, lines 15-19.

The phrases "so as to form particles containing DNA contaminants" and "particles resulting from step 1" are supported in the specification as filed at page 14, lines 11-21.

In claims 4 and 5, "aqueous solution" is amended to "the adjusted aqueous solution of step (1)" in order better to define the invention.

In claim 9, the phrase "obtained from step (2)" is added to make the claim more clear.

Claim 23 has been replaced by new claim 24. The concept of forming an acidic or alkaline solution and adjusting the pH is supported in the specification at page 15, line 245 to page 17, line 112.

Rejections under 35 U.S.C. 101

Claims 1, 4, 5, 9, 10, 17 and 19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 4, 6, 8 and 13 of US 7,332,289.

This rejection is respectfully traversed.

Submitted herewith is a terminal disclaimer containing the correct application number.

Rejections under 35 U.S.C. 112

Claims 1, 4, 5, 9, 10, 17, 19, 20 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This rejection is respectfully traversed. The claims have been amended to recite that the protein has an isoelectric point above pH 4.0 and to clarify which solutions are adjusted.

Claims 1, 4, 5, 9, 10, 17, 19, 20 and 23 are rejected under 35 U.S.C. 112, first paragraph, for failure to comply with the written description requirement.

This rejection is respectfully traversed.

The amendments to the claims restrict the "protein" to "an antibody or a modified antibody having an isoelectric point about pH 4.0." The scope of "sample" is restricted to "a culture medium from an antibody producing cell culture."

Accordingly, it is respectfully submitted that the scope of the amended claims is fully supported by the written description, since the specification contains a detailed description of a method for removing DNA contaminants from an antibody containing sample (supernatant of antibody producing cell culture) by adjusting both the pH and the ionic concentration.

Art Rejections

Claims 1, 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oxenburgh et al., Nature **207**:1416-1417, 1965 in view of Kipriyanov et al., *Molecular Biotechnology* **12**:173-201, 1999. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oxenburgh in view of Kipriyanov.

This rejection is respectfully traversed.

One of the important features of the presently claimed method is to form particles containing DNA contaminants by adjusting the pH and ionic concentration at the same time. To clarify this feature, the phrase "so as to form particles containing DNA contaminants" has been added to claim 1.

Oxenburgh discloses methods of precipitating nucleic acids from a protein extract using streptomycin. However, Oxenburgh neither teaches nor suggests adjusting the pH and ionic concentration for a sample solution. Moreover, there is nothing in Oxenburgh that teaches or suggests that such an adjustment relates to formation of particles containing DNA contaminants.

One skilled in the art reading Oxenburgh would recognize that streptomycin is an essential element for particle formation by the method disclosed therein. There is nothing in Oxenburgh that relates particle formation to properties of a solution such as ionic concentration and pH.

Kipriyanov neither teaches nor suggests adjusting the pH or ionic concentration of the solution in order to form particles of contaminants.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oxenburgh in view of Somack et al., 1999.

This rejection is respectfully traversed.

Even though Somack discloses that precipitated DNA can be removed by filtration, Oxenburgh does not disclose how to form this DNA precipitate. There is nothing in Overmuch that even suggests adjusting the pH and the isoelectric point of a solution in order to precipitate DNA. Moreover, Oxenburgh did not even contemplate solutions of recombinant proteins.

Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oxenburgh and Kipriyanov in view of Harlow et al., 1988 as evidenced by Fahrner et al., 1999.

This rejection is respectfully traversed.

There is absolutely nothing in any of the cited references that even suggests considering the isoelectric point of the solution when precipitating DNA contaminants. It is critical to the herein claimed method that both the pH and the ionic concentration be adjusted in order to precipitate DNA contaminates from a solution. This is neither shown nor suggested by any of the cited references, either alone or in combination.

Claims 1, 4, 5, 9, 10, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lydersen et al., 1994 in view of Harlow as evidenced by Farer.

This rejection is respectfully traversed.

The method disclosed in Harlow is for purifying an antibody by binding an antibody in a protein A column and washing and eluting the column. On the other hand, the method disclosed in Lydersen does not relate to the use of a protein A column. Thus, is it respectfully submitted that one skilled in the art could not possibly apply the method of Lydersen to that of Harlow, since the separation feature of Harlow is entirely different from that of Lydersen.

Furthermore, none of the cited references teaches or suggests that there is any relationship between pH and ionic concentration of a solution and DNA contaminant particle formation.

Thus, even combining Lydersen, Harlow and Fahrner, one skilled in the art would not deduce that controlling the pH and ionic concentration of an

antibody-containing solution would be effective to remove DNA contaminants by particle formation form the solution.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lydersen, Harlow and Fahrner in view of Somack.

This rejection is respectfully traversed.

The fact that Somack removed DNA precipitate by filtration adds nothing to Lydersen, Harlow and Fahrner, taken alone or in combination. None of these references even suggests that DNA contaminants can be precipitated from a protein-containing solution by controlling pH and isoelectric point along with the ionic concentration.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lydersen, Harlow and Fahrner in view of Sigma.

This rejection is respectfully traversed.

The fact that Sigma teaches an aqueous solution of 500 mM Tris at pH 3.5-5.0 adds nothing to the cited references. There is no suggestion for using the Sigma solution in any of the methods of the cited references. Moreover, there is no teaching or suggestion for controlling the pH/isoelectric point and ionic concentration of the solution to be treated.

As stated above, the presently claimed method is based upon an unexpected finding that DNA contaminants dissolved in a solution can be insolubilized under conditions of specific pH and ionic concentration ranges.

However, none of the cited references nor any common knowledge available at the time of the filing of the present application teaches or suggests that there is any relationship between an ionic concentration and pH range of a protein-containing solution and formation of particles of DNA contaminants.

Accordingly, it is respectfully submitted that controlling the pH and ionic concentration of a recombinant protein-containing solution, whrein the protein is an antibody or a modified antibody, to precipitate and remove DNA from a solution would not have been appreciated by one skilled in the art reading the cited references.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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